Dibaloke Chanda

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Work Experience

March 2021 - Present [Full Time]
Lecturer
Military Institute of Science and Technology (MIST)

Course Taken

- Random Signal and Processes
- Digital Signal Processing Laboratory
- Numerical Techniques Laboratory
- Digital Communication Laboratory
- Electrical Drive and Instrumentation
- Electrical Circuit Analysis I
- Microwave Engineering Laboratory
- Electrical Drive and Instrumentation Laboratory
- Electronic Devices and Circuits Sessional
- Principle of Electrical Engineering Sessional

Mar 2021 - Present [Part Time]
Research Engineer
Visual Information Processing(VIP) Lab, MIST

- R&D on Computer Vision Applications, Machine Learning Architectures.
- Mentoring young researchers and conducting technical sessions.

Jul 2020 – Feb 2021
Senior Mentor (Android and IOS App Development)
MIST Innovation Club

Education

Feb 2017 - Feb 2021
Military Institute of Science and Technology, Bangladesh University of Professionals(Dhaka, Bangladesh)
B.Sc. in Electrical, Electronic and Communication Engineering
(Major: **Communication**, CGPA: **3.98/4.00**, Rank: **2/87**)
Awards: *MIST Scholarship, MIST Dean's List of Honor and MIST Medal*

Research Interests

• Computer Vision • Explainable AI • Machine Learning • Probabilistic Models • Optimization theory • Human Computer Interaction

Relevant Courses

• Calculus • Vector analysis, Matrices and Geometry • Complex Variables and Statistics • Computer Programming • Continuous Signals and Linear Systems • Digital Communication • Digital Signal Processing • Random Signals and Processes

Technical Skills

- **Programming Languages and Tools:** *Python, Matlab, C, LaTeX, Java, Javascript,SQL, PHP, Dart, Assembly, Git, Shell*
- **Deep Learning & Computer-vision Packages:** *Keras, TensorFlow, PyTorch, Scikit-Learn, Open-CV, Mediapipe*
- **Web Development & App Development:** *Nodejs, Django, Flask, Flutter*
- **Data Processing & Visualization:** *Numpy, Pandas, Matplotlib, Seaborn, Plotly*
- **Robotics:** *Arduino, Raspberry Pi & Micro-controllers*
- **Graphics Design Software:** *Inkscape, Adobe XD*
- **Other Software:** *Pspice, Orcad, Proteus Design Suite*
- **Networking Software:** *Cisco Packet Tracer*

Selected Certifications | Issued by Coursera

- Computer Vision Basics
- Data Science Math Skills
- Managing Machine Learning Projects with Google Cloud
- Understanding and Visualizing Data with Python
- Inferential Statistical Analysis with Python
- Neural Networks and Deep Learning
- Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization
- Structuring Machine Learning Projects
- Convolutional Neural Networks
- Sequence Models
- Deep Learning Specialization

Test Scores

The International English Language Testing System (IELTS) - July 2022
Listening: 8.5 | Reading: 8.5 | Speaking: 6.5 | Writing: 6.5 | Overall: 7.5

Academic Research Experience

Feb 2020 – Feb 2021 | **An undergraduate thesis on Performance Analysis of Initialization Algorithms of Deep Neural Network Based Coordinated Beamforming System for mmWave**
Supervisor: Brigadier General A K M Nazrul Islam, PhD, Dean FECE, Head of Department, Department of EECE, Military Institute of Science and Technology

Publications

2022

1. Ovi, T. B., Naba, S. S., Onim, M. S. H. & **Chanda, D.** *A Transfer-Learning Based Ensemble Architecture for ECG Signal Classification* in *IEEE REGION 10 SYMPOSIUM* (2022).
2. Roy, K. & **Chanda, D.** *A Robust Webcam-based Eye Gaze Estimation System for Human-Computer Interaction* in *2022 International Conference on Innovations in Science, Engineering and Technology (ICISET)* (2022), 146–151.

2021

3. Alam, M. A., Hossain, S. M., **Chanda, D.** & Kabir, M. A. *Performance Analysis of LSTMs and Fbprophet Models for Short Term Load Forecasting* in *2021 5th International Conference on Electrical Engineering and Information & Communication Technology (ICEEICT)* (2021), 1–5.
4. **Chanda, D.** & Akash, M. I. *Performance Analysis Through Image and Video Transmission For Alamouti Space Time Block Coding Over Rayleigh And Rician Fading Channel* in *2021 5th International Conference on Electrical Engineering and Information & Communication Technology (ICEEICT)* (2021), 1–5.
5. **Chanda, D.**, Islam, A. N., *et al. Performance Analysis of Initialization Algorithms of Deep Neural Network Based Coordinated Beamforming System for mmWave* in *2021 5th International Conference on Electrical Engineering and Information & Communication Technology (ICEEICT)* (2021), 1–6.
6. Faiza, T. T., Haq, S. S., **Chanda, D.** & Halim, M. A. *A Study on the Performance Analysis of Hybrid Diversity Combining Techniques for Rayleigh and Rician Fading Channels under AWGN* in *2021 5th International Conference on Electrical Engineering and Information & Communication Technology (ICEEICT)* (2021), 1–6.
7. Halim, M. A., Haq, S. S., Faiza, T. T. & **Chanda, D.** *Comparative Analysis of Hybrid Diversity Schemes under AWGN and Impulsive Noise Models for Rayleigh Fading Channels* in *2021 5th International Conference on Electrical Engineering and Information & Communication Technology (ICEEICT)* (2021), 1–6.

Selected Projects

Oct 2022 – Oct
Visualizing Optical Flow
- Visualizing Optical Flow from Webcam input
- Visualizing Optical Flow from Video

Jul 2022 – Ongoing
Image based Bangla Sign Language Classification : A Ensemble Approach
- Background removal with gaussian threshold and morphological image processing
- Feature extraction with ensemble of pre-trained models and convolutional block attention

Jul 2022 – Sep 2022
Background Blurr with Mask-RCNN Based Instance Segmentation
- Instance Segmentation with Mask-RCNN
- Blurring background except selected object

Dec 2021 – Ongoing
Skin Cancer Classification with Ensemble Architecture
- Ensemble of three Deep CNN with varying dropout layers
- Implemented interpretability of the ensemble model

June 2021 – July 2021
Lung Cancer Classification with Watershed Segmentation
- Gabor Filter and Morphological image processing for Image preprocessing
- Watershed algorithm for segmentation

Feb 2020 – Apr 2020
Radar based industrial vehicular optimization and industrial safety enhancement
- Implemented PID controller based velocity and acceleration control in Simulink
- Prototype developed on Arduino system

Nov 2019 – Jan 2020
Speaker Dependent Spoken Digit Recognation in MatLab
- Created a database for voice samples of Digit "0" to "9" for three different speakers
- Preprocessed datatset with silence removal and noise suppression
- Classification of voice sample with features like power, frequency, ZCR

Jul 2019 – Sep 2019
Intelligent irrigation system to improve agricultural output using IOT sensors
- Hardware Prototype developed on Arduino and Raspberry
- Created an Mobile App on Flutter platform for remote telemetry

Feb 2019 – May 2019
Integrated home-security, automation & surveillance with Raspberry Pi, sensors & webcam
- Hardware Prototype developed on Arduino and Raspberry PI
- Text Notification and Mail Notification for Intruder Alert

Feb 2018 – May 2018
Automatic Accident Detection and Emergency Response System
- Hardware Prototype developed on Arduino with Gyro sensor
- Web-based alert system and email notification

Achievements and Other Credentials

2019 | **IEEE Conference Project Presentation: 1st Runner-up** | ***Awarded By:*** *ICEEICT*

2021 | **Instructor of Python Certification Course 2021** | ***Arranged By:*** *EECE Department, MIST*

2022 | **Instructor of Python Certification Course 2022** | ***Arranged By:*** *EECE Department, MIST*